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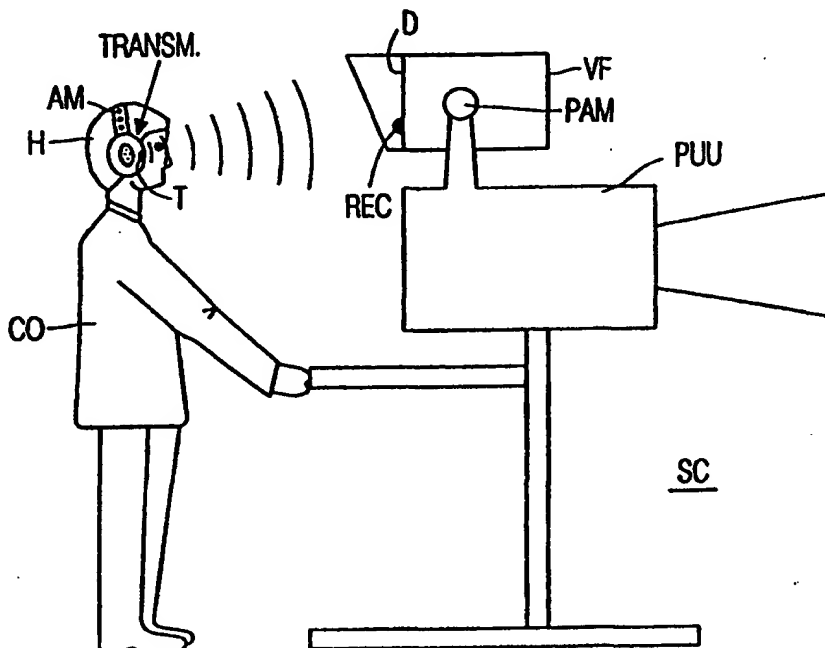
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: STUDIO CAMERA VIEWFINDER

(57) Abstract

In a studio camera (SC), comprising an image pickup unit (PUU) for converting a scene into image signals, and a viewfinder (VF) for displaying the image signals on a viewfinder display (D), the viewfinder (VF) having a position adjustment mechanism (PAM) for allowing a camera operator (CO) to have an optimal view on the viewfinder display (D), the position adjustment mechanism (PAM) is automatically controlled so as to direct the viewfinder display (D) to the camera operator (CO).



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Studio camera viewfinder.

The invention relates to a viewfinder for a studio camera, and to a studio camera provided with a viewfinder.

Studio camera viewfinders are hand-adjusted to allow the camera operator to
5 have a good view on what is picked up by the camera. Especially for viewfinders having an LCD display, known for having a large viewing angle dependency of the display, it is very important that the camera operator continuously has a good view on the viewfinder display. To adjust the viewfinder orientation, the viewfinder is provided with a pan and tilt mechanism that is to be operated by the camera operator, who for this purpose, has to remove his hands
10 from the camera controls (sharpness, zooming, pan, tilt).

It is, inter alia, an object of the invention to facilitate a camera operator's work. To this end, primary aspects of the invention provide a camera viewfinder unit, a studio camera, and a head-mountable transmitter as defined in the independent claims. Advantageous
15 embodiments are defined in the dependent claims.

In a studio camera in accordance with the present invention, comprising an image pickup unit for converting a scene into image signals, and a viewfinder for displaying the image signals on a viewfinder display, the viewfinder having a position adjustment mechanism for allowing a camera operator to have an optimal view on the viewfinder display,
20 the position adjustment mechanism is automatically controlled so as to direct the viewfinder display to the camera operator.

These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter.

25 In the drawings:

Fig. 1 shows an embodiment of a studio camera in accordance with the present invention; and

Fig. 2 shows parts of the studio camera of Fig. 1 in more detail.

In the embodiment of Figs. 1 and 2, the studio camera SC comprises an image pickup unit PUU and a viewfinder VF. The viewfinder VF has a position adjustment mechanism PAM to automatically direct a viewfinder display D to a camera operator CO. In a simple embodiment, the position adjustment mechanism PAM just has a tilt motor M.

5 Obviously, in more complex embodiments, other movements like panning are also possible. The position adjustment mechanism PAM is controlled by a receiver REC that receives position information signals from a transmitter TRANSM unit mounted on a head H of the camera operator CO. The transmitter unit TRANSM has a device for attaching the transmitter to the head H, and a proper transmitter T.

10 So, in a preferred embodiment, to ensure that a viewfinder VF is always directed to a camera operator's face (especially important if the viewfinder display D is an LCD having a viewing angle dependent visibility), the viewfinder VF is provided with a (tilt) motor M which is controlled by a transmitter TRANSM, preferably an optical transmitter, mounted on the cameraman's head H, preferably in his headphone, in such a manner that the
15 viewfinder display D is always directed to the camera operator's face. Advantage: now that the camera operator CO no longer needs to adjust the viewfinder (tilt) angle manually, he can use both hands for controlling the camera SC.

It should be noted that the above-mentioned embodiments illustrate rather than
20 limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. In one alternative embodiment, the viewfinder's position adjustment mechanism comprises a gyroscope to ensure that the viewfinder display stays directed to the camera operator's face even if the image pick-up unit is moved. In the claims, any reference signs placed between parentheses shall not be
25 construed as limiting the claim. The word "comprising" does not exclude the presence of other elements or steps than those listed in a claim. The invention can be implemented by means of hardware comprising several distinct elements, and by means of a suitably programmed computer. In the device claim enumerating several means, several of these means can be embodied by one and the same item of hardware.

CLAIMS:

1. A studio camera (SC), comprising:
an image pickup unit (PUU) for converting a scene into image signals; and
a viewfinder (VF) for displaying said image signals on a viewfinder display
(D), said viewfinder (VF) having a position adjustment mechanism (PAM) for allowing a
5 camera operator (CO) to have an optimal view on said viewfinder display (D), wherein said
position adjustment mechanism (PAM) is automatically controlled so as to direct said
viewfinder display (D) to said camera operator (CO).
2. A studio camera (SC) as claimed in claim 1, wherein said position adjustment
10 mechanism (PAM) comprises at least one motor (M) that is controlled by a receiver (REC) for
receiving signals from a transmitter unit (TRANSM) attached to said camera operator (CO).
3. A studio camera viewfinder (VF), comprising:
a viewfinder display (D) for displaying image signals from an image pickup
15 unit (PUU); and
a position adjustment mechanism (PAM) for allowing a camera operator (CO)
to have an optimal view on said viewfinder display (D), wherein said position adjustment
mechanism (PAM) is automatically controlled so as to direct said viewfinder display (D) to
said camera operator (CO).
20
4. A studio camera viewfinder (VF) as claimed in claim 3, wherein said position
adjustment mechanism (PAM) comprises at least one motor (M) that is controlled by a
receiver (REC) for receiving position control signals from a transmitter unit (TRANSM)
attached to said camera operator (CO).
- 25 5. A head-mountable transmitter unit (TRANSM), comprising:
means (AM) for attaching said transmitter unit (TRANSM) to a camera
operator's (CO) head (H); and
means (T) for transmitting position control signals.

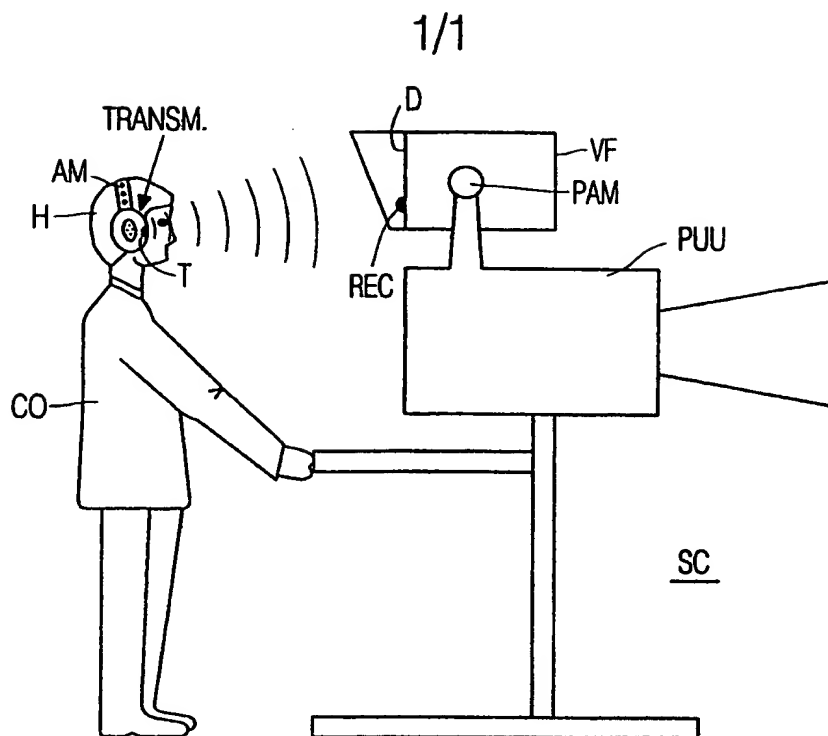


FIG. 1

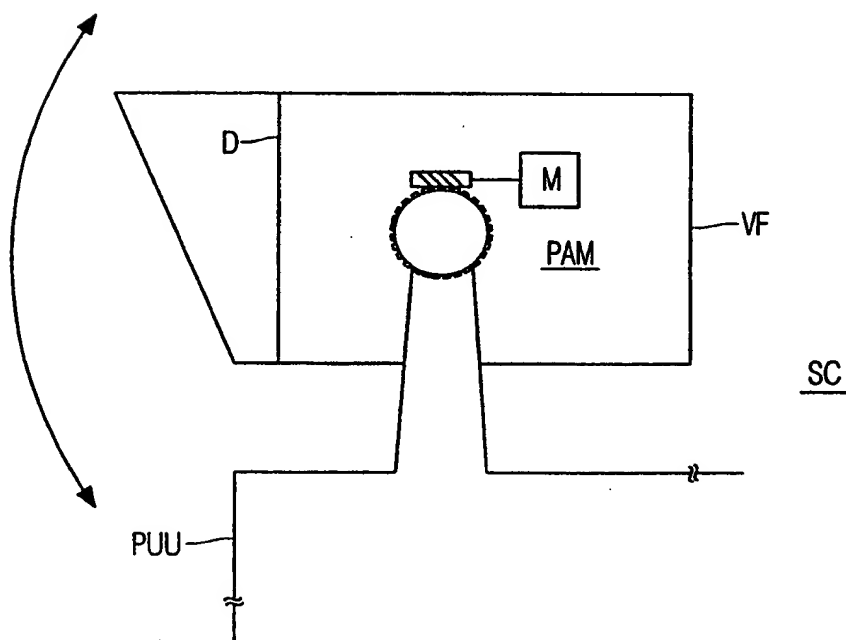


FIG. 2

INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/EP 99/08340

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/225

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N G03B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	US 5 949 504 A (KIM HYEONG-GWEON) 7 September 1999 (1999-09-07)	1, 3
P, A	column 2, line 41 - column 3, line 21 column 4, line 4 - line 63 column 5, line 31 - line 49 & KR 9 724 923 A (SAMUNG)	2, 4
X A	---	1, 3 2, 4
X	US 4 118 720 A (GOTTSCHALK ROBERT E) 3 October 1978 (1978-10-03) column 2, line 7 - line 21 column 1, line 4 - line 13	1, 3
X	---	1, 3
A	US 5 548 334 A (ICHIYOSHI HIROYUKI) 20 August 1996 (1996-08-20) column 7, line 19 - line 57	2, 4

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

7 February 2000

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 5 734 421 A (MAGUIRE JR FRANCIS J) 31 March 1998 (1998-03-31) column 6, line 25 - line 46 column 5, line 19 -column 6, line 12 column 4, line 48 -column 5, line 3 -----</p>	5

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 99/08340

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5949504	A	07-09-1999	NONE		
US 4118720	A	03-10-1978	AT	373085 B	12-12-1983
			AT	3878 A	15-04-1983
			AU	498447 B	15-03-1979
			CA	1078242 A	27-05-1980
			CA	1112090 B	10-11-1981
			CH	629900 A	14-05-1982
			DD	136307 A	27-06-1979
			DE	2759256 A	13-07-1978
			FR	2376496 A	28-07-1978
			GB	1569030 A	11-06-1980
			HK	56081 A	20-11-1981
			IT	1111387 B	13-01-1986
			JP	53130922 A	15-11-1978
			NL	7714561 A,B,	05-07-1978
US 5548334	A	20-08-1996	JP	3208474 A	11-09-1991
			JP	3208475 A	11-09-1991
US 5734421	A	31-03-1998	NONE		